This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-30 (CANCELLED)

31. (NEW) An internal combustion engine comprising:

a piston disposed in each of a pair of cylinders, one end of the piston cooperating with the cylinder to form a combustion chamber, the other end of the piston coupled to a plunger that moves in unison with the piston;

a scavenging pump disposed at the end of a cylinder, the scavenging pump comprising first and second chambers defined by the movable plunger;

wherein the pump is configured to draw fluid into the first chamber from outside the pump when the outer piston is moving toward from the inner piston, and to direct the fluid from the first chamber into the second chamber, pressurizing it, when the outer piston is moving away from the inner piston; and

wherein the pressurized second chamber is able to communicate with the intake ports of both cylinders so that the pressurized fluid is directed into each when intake ports are opened.

32. (NEW) The engine of claim 31 wherein the two cylinders in the pair are opposed cylinders having a common axis, each cylinder having a pair of opposing inner and outer pistons that define a combustion chamber and reciprocate on the common axis.

33. (NEW) The engine of claim 32 wherein the pairs of pistons are coupled to a crankshaft disposed between the cylinders.

34. (NEW) The engine of claim 31 wherein the scavenging pump further comprises

a one-way transfer valve between the first chamber and outside the pump that opens when the outer piston for a plunger is moving toward the inner piston, allowing fluid to be is directed into the first chamber; and

a one-way transfer valve between the first chamber and the second chamber that opens as the same outer piston is moving away from the inner piston, allowing fluid to be from the first chamber into the second chamber.

35. (NEW) The engine of claim 33 wherein the crankshaft comprises two outer piston journals and an inner piston journal disposed between the outer piston journals; the inner piston journal receiving pushrods from each inner piston; a first outer piston journal receiving a first pull rod from each of the outer pistons; and a second outer piston journal receiving a second pull rod from each of the outer pistons.

36. (NEW) An internal combustion engine comprising:

two opposed cylinders having a common axis, each cylinder having a pair of opposing inner and outer pistons that define a combustion chamber and reciprocate on the common axis, the pairs of pistons being coupled to a crankshaft disposed between the cylinders,

the crankshaft comprising two outer piston journals and an inner piston journal that is disposed between the outer piston journals, each journal being commonly coupled to either a pair of inner pistons or outer pistons from opposite cylinders, the journals being arranged so that the outer pistons open and close an intake port for a cylinder, and the inner pistons open and close an exhaust port for a cylinder;

a pair of scavenging pumps, one disposed at each end of a cylinder, the scavenging pumps each comprising first and second chambers and a movable plunger defining the volume of the chambers, the plunger being coupled to and moving in unison with an outer piston so that it draws fluid into the first chamber as the plunger moves with the outer piston toward the crankshaft so that it directs the fluid into the second chamber, as the plunger moves with the outer piston away from the crankshaft; and

wherein the pressurized second chamber is in fluid communication with intake ports of one or both cylinders so that pressurized fluid is directed into the intake ports of the one or both cylinders as they are opened.

37. (NEW) The engine of claim 36 wherein the inner piston journal is disposed between the outer piston journals; the inner piston journal receiving pushrods from each inner piston; a first outer piston journal receiving a first pull rod from each of the outer pistons; and a second outer piston journal receiving a second pull rod from each of the outer pistons.

38. (NEW) The engine of claim 36 wherein the pistons coupled to a common journal are rotatably coupled to the journal by a single, common bearing that is disposed over the journal.

39. (NEW) The engine of claim 36 wherein the first scavenging chamber is defined by an end of a housing and a plunger extending rearward from the outer piston, the second chamber capable of communicating with the intake port of the opposite cylinder via a crankshaft cavity that is in fluid communication with the second chamber and the intake port.

40. (NEW) An internal combustion engine comprising:

two opposed cylinders having a common axis, each cylinder having a pair of opposing inner and outer pistons that define a combustion chamber and reciprocate on the common axis, the pairs of pistons being coupled to a crankshaft disposed between the cylinders;

a pair of scavenging pumps, one disposed at each end of a cylinder, the scavenging pumps each comprising first and second chambers and a movable plunger defining the volume of the chambers, the plunger being coupled to and moving in unison with an outer piston so that it draws fluid into the first chamber as the plunger moves with an outer piston toward the crankshaft, and so that it directs the fluid into the second chamber as the plunger moves with the outer piston away from the crankshaft;

wherein the pressurized second chamber is in fluid communication with an intake port of one or both cylinders;

wherein the first chamber is defined by an end of a housing and a plunger extending rearward from the outer piston, the movement of the plunger away from the crankshaft directing fluid from the second chamber into the intake port of the cylinder that is opposite the one to which the pump is disposed.

41. (NEW) An internal combustion engine comprising:

two opposed cylinders having a common axis, each cylinder having a pair of opposing inner and outer pistons that define a combustion chamber and reciprocate on the common axis, the pairs of pistons being coupled to a crankshaft disposed between the cylinders; and

the crankshaft comprising two outer piston journals and an inner piston journal that is disposed between the outer piston journals, each journal being commonly coupled to either a pair of inner pistons or outer pistons from opposite cylinders, the journals being arranged so that the outer pistons open and close an intake port for a cylinder, and the inner pistons open and close an exhaust port for a cylinder.

42. (NEW) The engine of claim 41 wherein on at least one journal, the pushrod or pull rod has a single tang and the other pushrod or pull rod has two tangs that receive the single tang therebetween, the tangs being disposed over a single, common bearing that is disposed over the journal.

43. (NEW) The engine of claim 41 wherein on at least one journal a pushrod has a single tang and the other pushrod has two tangs that receive the single tang therebetween, the tangs being over a single, common bearing that is disposed over the journal; and on at least one other journal a pullrod has a single tang and the other pullrod has two tangs that receive the single tang therebetween, the tangs being over a single, common bearing that is disposed over the journal.

44. (NEW) An internal combustion engine comprising:

at least two opposed cylinders aligned on a common axis, each cylinder comprising a pair of opposed pistons reciprocating along the common axis, and an end of each opposed piston, in conjunction with a cylinder, defining a combustion chamber; and

the pair of opposed pistons comprising an inner piston and an outer piston;

each cylinder comprises at least one exhaust port disposed so that reciprocation of the inner piston opens and closes the exhaust port, and at least one intake port disposed so that reciprocation of the outer piston opens and closes the intake port;

a crankshaft linked to each inner piston by a push rod and linked to each outer pistons by a pull rod, wherein rotation of the crankshaft causes asymmetric port timing so that the exhaust ports are opened by their respective inner pistons before the intake ports are opened by their respective outer pistons, and the exhaust ports are closed by their respective inner pistons before the intake ports are closed by their respective outer pistons.

45. (NEW) The engine of claim 44 further comprising:

a scavenging pump associated with each cylinder, the scavenging pump comprising first and second chambers defined by a movable plunger that is coupled to and moves in unison with the outer piston for a given cylinder to draw in a fluid from outside the pump into the first chamber when the outer piston is moving away from the crankshaft, and to direct fluid from the first chamber into the second chamber, pressurizing it, when the outer piston is moving toward the crankshaft; and

wherein the pressurized second chamber is in communication with the intake ports of both cylinders so that the pressurized fluid is directed into each when opened.

46. (NEW) The engine of claim 44 wherein the crankshaft has an arrangement of journals so that there is a phase angle of about 20 degrees between the intake ports and the exhaust ports.

47. (NEW) An internal combustion engine comprising:

at least two opposed cylinders having a common axis, each cylinder including at least one first piston, the first pistons in the opposing cylinders reciprocating on the common axis;

a crankshaft disposed between the two cylinders, the crankshaft having a first journal; and

a pair of connecting elements that are commonly coupled to the journal and respective first pistons, the connecting elements rotateably disposed over the journal and being movably alignable on the common axis.

48. (NEW) An internal combustion engine comprising:

at least two opposed cylinders having a common axis, each cylinder including at least one first piston, the pistons in the opposing cylinders reciprocating on the common axis;

a crankshaft disposed between the cylinders comprising at least one journal, wherein the first pistons are each coupled to respective ends of inner-piston pushrods, and the opposite ends of the inner-piston pushrods are commonly coupled to the journal, wherein the journal comprises a nested assembly of two coaxial components.

49. (NEW) The engine of claim 48 wherein a crankshaft coupling-end of one push rod complementarily receives the crankshaft coupling-end of the other pushrod.

50. (NEW) The engine of claim 48 further comprising a second piston in each cylinder to form a pair of opposed pistons in a cylinder, in each pair the second pistons being the outer pistons from the crankshaft, each pair movable on a common axis and defining a combustion chamber, and wherein the second pistons are each coupled to respective ends of outer-piston pullrods, and the opposite ends of the outer-piston pullrods are coupled to a common second journal on the crankshaft, wherein the second journal comprises a nested assembly of two coaxial components.

51. (NEW) The engine of claim 49 wherein a crankshaft coupling-end of one pull rod complementarily receives the crank-shaft coupling-end of the other pullrod.

52. (NEW) The engine of clam 48 wherein a set of pullrods or pushrods are rotateably disposed over a single, common bearing disposed over a journal.

53. (NEW) The engine of claim 47 further comprising a lubrication port disposed in one of the single tang and the two tangs and associated conduit adapted to provide a lubricant to the bearing.

54. (NEW) The engine of claim 31 wherein the second chamber is capable of communicating with the intake port of the opposite cylinder via a crankshaft cavity that is in fluid communication with the second chamber and the intake port.

55. (NEW) The engine of claim 40 wherein the second chamber of each scavenging pump is capable of communicating with the intake port of the opposite cylinder via a crankshaft cavity that is in fluid communication with the second chamber and the intake port.